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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,640	07/15/2003	Hideki Sugiura	240356US0	5239

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EXAMINER	
DOTE, JANIS L	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
04/09/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/618,640	SUGIURA ET AL.	
	Examiner	Art Unit	
	Janis L. Dote	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-14 and 16-20* is/are pending in the application.

4a) Of the above claim(s) *19 and 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-14 and 16-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The examiner acknowledges the cancellation of claim 2 and the amendments to claims 1, 12, 18, and 19 filed on Dec. 28, 2007. Claims 1, 3-14, and 16-20 are pending.

2. The examiner acknowledges applicants' elected species, oxide particles comprising the metal element Ti, set forth in the response filed on Aug. 22, 2005. Claims 1, 3-14, and 16-18 read on the elected species.

Accordingly, claims 19 and 20 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention and nonelected species of invention, there being no allowable generic or linking claim. Applicants timely traversed the restriction (election) requirement in Aug. 22, 2005.

3. The rejection of claims 1, 3, and 4 under 35 U.S.C. 102(b)/103(a) over US 4,983,369 (Barder), set forth in the office action mailed on Oct. 4, 2007, paragraph 8, has been withdrawn in response to the amendment to claim 1 filed on Dec. 28, 2007. That amendment limits the primary particle size of the oxide fine particles to be "50 nm to 170 nm." Barder does not disclose oxide particles having said primary particle size.

The rejections of claims 1, 4, and 9 under 35 U.S.C. 102(b)/103(a) over WO 01/98211 A1 (Shibasaki) and of claims 11-14 and 16-18 under 35 U.S.C. 103(a) over Shibasaki combined with the other cited references, set forth in the office action mailed on Oct. 4, 2007, paragraphs 13-16, have been withdrawn in response to the amendments to claims 1, 12, and 18 filed on Dec. 28, 2007. Those amendments limit the primary particle size of the oxide fine particles to be "50 nm to 170 nm." Shibasaki does not disclose oxide particles having the primary particle size recited in the instant claims.

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1 and 3-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2003/0044706 A1 (Konya), as evidenced by applicants' admissions in the instant specification at page 41, lines 3-4, and in Tables 1 and 2, examples 1-13 and comparative examples 1-4 (applicants' admission III).

Konya discloses hydrophobic spherical complex oxide particles comprising silica and titania. The hydrophobic

spherical complex oxide particles have a particle size distribution of 40 to 180 nm. The hydrophobic spherical complex oxide particles are obtained by surface treating spherical complex oxide particles with hexamethyldisilazane. See example 6 in paragraphs 0058 to 0060 and in Table 1 at page 6. Hexamethyldisilazane is represented by the formula $R^1_3SiNHSiR^1_3$ where R^1 is methyl. See paragraph 0050. According to Konya, the hexamethyldisilazane introduces a $R^1_3SiO_{1/2}$ unit on the surface of the complex oxide particles, where R^1 is methyl. See Konya, paragraphs 0047-0049. Konya at paragraphs 0047-0048 discloses that the surface of the hydrophobized complex oxide particles has surface units of formula (1) $R^1_xR^2_yR^3_zSiO_{(4-x-y-z)/2}$, where each R is substituted or unsubstituted monovalent hydrocarbon group having 1 to 6 carbon atoms, and x, y, and z each is an integer of 0 to 3, and x+y+z is from 1 to 3. For hexamethyldisilazane, x is 3, y and z are 0, and formula (1) is $R^1_3SiO_{1/2}$ where R^1 is methyl. The Konya hydrophobic spherical complex oxide particles meet the compositional limitations recited in instant claims 1 and 5-10.

Konya does not disclose that its spherical hydrophobic complex oxide particles have circularities SF1 and SF2 as recited in the instant claims. Nor does Konya disclose that its spherical hydrophobic complex oxide particles have a number

average particle size and standard deviation σ of the particle size distribution as recited in the instant claims. However, as discussed above, the Konya hydrophobic spherical complex oxide particles meet the compositional limitations recited in the instant claims. Konya describes the hydrophobic complex oxide particles as "spherical." See paragraph 0046 and example 6. The particles have a particle size distribution of 40 to 180 nm.

According to the instant specification at page 41, lines 3-4, "[i]f a particle is exactly spherical, the particle has both SF1 and SF2 of 100." The instant specification also discloses that the toners comprising oxide particles having the SF1 and SF2 values, the number average particle size, and the particle size distribution recited in the instant claims provide images with very little or no "hollow defects." See Table 1, examples 1-13. Table 1 shows that when the oxide particles have SF1 and SF2 values that are not within the ranges recited in the instant claims, the toner provides images having "hollow defects." See, e.g., comparative example 4 in Tables 1 and 2, where the SF1 is 131 and the SF2 is 127. Table 1 also shows that when the oxide particles do not have the number average particle size or a particle size distribution as recited in the instant claims, the toner provides images having "hollow defects." The "hollow defects" are formed from untransferred

toner. See, e.g., comparative examples 1 and 2 in Tables 1 and 2, where the number average particle size is 310 nm and 28 nm, respectively; and comparative example 3 in Tables 1 and 2, where σ is about 0.09R. According to Konya, when its hydrophobic complex oxide particles are used as an external additive in toners, the toners have improved fluidity and cleaning characteristics, as well as stable and uniform charging characteristics. Paragraph 0007. The toners provide images with no white spots, i.e., no adhesion of the toner to the photoconductor. In other words, there is no untransferred toner. Paragraph 0067 and Table 1, example 6. These properties appear to be the same properties sought by applicants. Accordingly, because the Konya hydrophobic complex oxide particles in example 6 meet the compositional limitations recited in the instant claims and are described as "spherical," and because when said hydrophobic spherical complex oxide particles are used as the external additive in toners, the toners appear to have the properties sought by applicants, it reasonable to presume that the Konya spherical hydrophobic complex oxide particles have the SF1 value, the SF2 value, the number average particle size, and the particle size distribution as recited in the instant claims. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Konya, as evidenced by applicants' admission III, combined with US 2001/0051270 A1 (Yamashita).

Konya, as evidenced by applicants' admission III, discloses hydrophobic spherical complex oxide particles as described in paragraph 5 above, which is incorporated herein by reference. As discussed in paragraph 5 above, Konya discloses that the hydrophobic spherical complex oxide particles are obtained by surface treating spherical complex oxide particles with hexamethyldisilazane, which introduces a $R^1_3SiO_{1/2}$ unit on the surface of the complex oxide particles.

Yamashita teaches that hydrophobic inorganic particles, such as hydrophobic silica particles, can be further treated with a silicone oil, such that the oil-treated inorganic particles have a "free silicone degree," i.e., a "liberation degree" of silicone oil of 10 to 70%. Paragraphs 0025-0027 and 0105-0110; and paragraph 0102, which discloses that the inorganic particles can be treated with a hydrophobizing agent before the silicone oil treatment. The free silicone degree of 10 to 70% meets the liberation degree of silicone oil range of 10 to 95% recited in instant claim 11. According to Yamashita, when said oil-treated silica particles are used as an external additive in a toner, the toner provides good quality images with

"good fixing property without causing image omissions even when used for paper-drive image forming method." Paragraph 0022. According to Yamashita, "[w]hen the free silicone degree is too small, the effect (i.e., to prevent image omissions) can hardly be exerted. To the contrary, when the free silicone degree is too large, adverse effects such as deterioration of resolution and image density of the resultant images are exerted." Paragraphs 0046 and 0050. Thus, the reference recognizes that the free silicone degree is a result-effective variable. The variation of a result-effective variable is presumably within the skill of the ordinary worker in the art.

It would have been obvious for a person having ordinary skill in the art to further treat the Konya hydrophobic spherical complex oxide particles with silicone oil as taught by Yamashita, such that the resultant silicone oil treated hydrophobic spherical complex oxide particles have a free silicone degree of 10 to 70%. That person would have had a reasonable expectation of successfully obtaining silicone oil treated hydrophobic spherical complex oxide particles that, when used as an external additive in a toner provided, the resulting toner provides good quality images with "good fixing property without causing image omissions" as disclosed by Yamashita.

7. Claims 12-14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konya, as evidenced by applicants' admission III, combined with US 6,080,519 (Ishiyama).

Konya, as evidenced by applicants' admission III, discloses hydrophobic spherical complex oxide particles as described in paragraph 5 above, which is incorporated herein by reference.

Konya further discloses a two-component developer comprising a carrier and a color toner. The color toner comprises: (1) color toner particles; and (2) the hydrophobic spherical complex oxide particles of example 6. Paragraphs 0061 and 0067. The hydrophobic spherical complex oxide particles of example 6 are present in an amount of 2.4 parts by weight based on 100 parts by weight of the toner, which meets the amount ranges recited in instant claims 13 and 14. The amount of 2.4 parts by weight per 100 parts by weight of toner is determined from the information provided in paragraph 0061 (i.e., 1/(40+1)). The toner particles comprise a polyester binder resin, which meets the toner binder resin limitation recited in instant claim 17.

The Konya toner particles have an average particle size of 7 μm. Konya does not expressly describe the average particle size as a volume average particle size as recited in instant

claims 12 and 18. However, the numerical value of the average particle size is within the range of numerical values of the volume average particle size of 2 to 7 μm recited in instant claims 12 and 18.

Ishiyama teaches that when the volume average particle size of the toner is less than 2 μm, the charge property of the toner is insufficient and lowers the developing property (i.e., the developing quality). If the volume average particle size is greater than 9 μm, the resolution of the image is degraded. Col. 7, lines 22-27. The range of 2 to 9 μm overlaps the range of 2 to 7 μm recited in instant claims 12 and 18. Thus, the toner art recognizes the volume average particle size as being a result-effective variable. The variation of a result-effective variable is presumably within the skill of the person having ordinary skill in the art.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Ishiyama, to adjust, through routine experimentation, the particle size of the toner particles disclosed by Konya, such that the resultant toner particles have a volume average particle size within the scope of instant claims 12 and 18. That person would have had a reasonable expectation of successfully obtaining a toner that provides images with improved resolution.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Konya, as evidenced by applicants' admission III, combined with Ishiyama, as applied to claim 12 above, further combined with US 5,554,478 (Kuramoto).

Konya, as evidenced by applicants' admission III, combined with the teachings in Ishiyama renders obvious a color toner as described in paragraph 7 above, which is incorporated herein by reference.

Konya does not exemplify color toner particles comprising a polyol resin binder as recited in instant claim 16.

Kuramoto discloses a polyol binder resin that comprises a main chain portion containing an epoxy resin moiety and a polyoxyalkylene moiety. Col. 3, lines 52-56. The polyol binder resin is synthesized by reacting (1) an epoxy resin, (2) a dihydric phenol, and (3) either an alkylene oxide adduct of a dihydric phenol or a glycidyl ether thereof. See Synthesis Example 1 at col. 8. Said binder resin meets the polyol recited in instant claim 16. According to Kuramoto, color toners comprising said binder resin provide images with excellent color reproducibility and uniform glossiness. Col. 3, lines 32-35, and col. 19, lines 14-17. Said toners also have excellent environmental stability. Col. 3, lines 39-41.

It would have been obvious for a person having ordinary

skill in the art to use the Kuramoto polyol binder resin as the binder resin in the toner rendered obvious over the combined teachings of Konya, as evidenced by applicants' admission III, and Ishiyama. That person would have had a reasonable expectation of successfully obtaining a color toner that has excellent environmental stability and that provides color images with excellent color reproducibility and uniform glossiness.

9. Applicants' arguments filed on Dec. 28, 2007, as applicable to the rejections over Konya set forth in paragraphs 5-8 above have been fully considered but they are not persuasive.

Applicants assert that the Rule 132 declaration, which was executed by Hideki Sugiura on Dec. 26, 2007, and filed on Feb. 14, 2008, shows that the Konya hydrophobic spherical complex oxide particles comprising silica and titania do not have a standard deviation σ that satisfies the relation $R/4 \leq \sigma \leq R$, where R is the number average primary particle diameter, recited in instant claims 1, 12, and 18.

However, the showing in the Rule 132 declaration is not persuasive for the following reasons:

The declarant does not establish any credible relation between the data analyzed (Barder) and the reference relied on (Konya). The declaration is therefore no more than an

unsupported opinion, and is not entitled to any probative weight.

For example, the silica particles of Barder are approximately ten times larger than the complex oxide particles of Konya. The declarant states, without explanation, that the standard deviation of the Konya particle diameters is a factor of ten smaller than the standard deviation determined for the particles in Barder. The Konya particles and the particles in Barder, however, are made by different methods from different starting materials. Other than arbitrary numerical manipulation, there appears to be no basis for the declarant's conclusion.

Furthermore, the declarant has not explained why Figure 1 of Barder (Comparative Example, Single-phase reaction) is adequate to draw conclusions about the entire sample.

Accordingly, applicants have not met their burden by providing any credible objection evidence to show that the Konya complex oxide particle diameters do not a standard deviation σ that satisfies the relation $R/4 \leq \sigma \leq R$ recited in instant claims 1, 12, and 18. The rejections over Konya stand.

10. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS**

ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Sandra Sewell, whose telephone number is (571) 272-1047.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or

access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Janis L. Dote/
Primary Examiner, Art Unit 1795

JLD
Mar. 31, 2008